

Date: Mon, 11 Apr 94 11:11:34 PDT
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
Precedence: Bulk
Subject: Info-Hams Digest V94 #404
To: Info-Hams

Info-Hams Digest Mon, 11 Apr 94 Volume 94 : Issue 404

Today's Topics:

 * SpaceNews 11-Apr-94 *
 50 Ohm Repeater
Any experience with doppler rdf (radio direction finders)?
 Anyone Bicycle Mobile?
 C91J QSL Info
Delivery Failure Report (2 msgs)
 FCC Delays
 FT-530 DC CONNECTOR
 Ham radio in Germany
Kenwood TH-78A *OR* Yaesu FT-530
Low cost antenna required
more heinous thoughts
online repeater directory
WWV Antennas (2 msgs)

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Apr 94 16:05:43 GMT
From: news-mail-gateway@ucsd.edu
Subject: * SpaceNews 11-Apr-94 *
To: info-hams@ucsd.edu

SB NEWS @ AMSAT \$SPC0411
* SpaceNews 11-Apr-94 *

BID: \$SPC0411

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SpaceNews
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MONDAY APRIL 11, 1994

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited distribution.

* NEW AO-13 SCHEDULE *

=====

Magnetorquing from attitude 180/0 to 230/-5 commenced on Apr 04 [Fri] 1810 UTC, orbit 4446/224, and continued for 8 perigees. The new schedule commenced on orbit 4452 MA 145 Apr 07 [Thu] 1120 UTC.

*** AO-13 TRANSPONDER SCHEDULE *** 1994 Apr 07-Jul 11

Mode-B : MA 0 to MA 170 |

Mode-BS : MA 170 to MA 218 |

Mode-S : MA 218 to MA 220 |<- S beacon only

Mode-S : MA 220 to MA 230 |<- S transponder; B trsp. is OFF

Mode-BS : MA 230 to MA 250 | Alon/Alat 230/-5

Mode-B : MA 250 to MA 256 |

Omnis : MA 250 to MA 120 | Move to attitude 180/0, Jul 11

NEW ATTITUDE - Note: The mean attitude for the period 1994 Apr 07-Jul 11 will be ALON/ALAT 230/0. This is an Alon 10 degrees "better" than originally proposed. It is achieved at the expense of a 10 degree "worse" Sun angle, which will now reach 40 degrees (77% illumination) May 30-Jul 11. During that period the Mode-B transponder *might* have to be OFF from MA 250-80 to conserve battery power.

Please don't rely on gossip and rumour! Continuous up to date information about AO-13 operations is always available on the beacons, 145.812 MHz or 2400.664 MHz in CW, RTTY and 400 bps PSK. These bulletins are also posted to Internet, ANS, Packet, PacSats etc, and many international newsletters. A 400 bps PSK decoder is available from G3RUH and several DSP products; display software P3C.EXE etc from many AMSAT groups.

The active command stations are listed below, and constructive feedback about operations is always welcome.

Peter DB20S @ DB0FAU.#NDS.DEU.EU

James G3RUH @ GB7DDX.#22.GBR.EU
Graham VK5AGR @ VK5WI.#ADL.#SA.AUS.OC

The above may also be reached via Internet (callsign@amsat.org) and K0-23.
Please remember to state clearly a return address.

Notes prepared on behalf of, and in total cooperation with the above by:

James Miller G3RUH @ GB7DDX.#22.GBR.EU 1994 Apr 04 [Mon] 0600 UTC

* AMSAT NET VIA SATELLITE *

=====

Bruce Paige, KB5ZRV, is the AMSAT Area Coordinator in Houston, Texas. Bruce runs a local AMSAT net that meets on the 147.100 MHz repeater every Tuesday evening at 10:00 PM local Central Time. The net is rebroadcast over the Galaxy 3 satellite, Transponder 17 on a 5.8 MHz subcarrier.

This net is then received live and retransmitted by repeater operators in Toronto, Canada, Anchorage, Alaska (3 repeaters), New England States (6 repeaters), Ontario, CA, Lawton, OK, Indianapolis, IN, Fargo, ND. It has also been heard in Hawaii and other states.

The net has a telephone number for those that would like to ask questions of the net or check in. There are beginners segments that lasts 3-5 minutes, and explain how satellite novices can work various satellites, describes different types of station equipment necessary to work satellites, and other topics that beginners find useful in getting started in satellite operations. SAREX operating techniques have also been covered.

This net re-broadcast is free for the taking by those with TVRO ground stations. The people who run the net are having a great time and have found many people are listening in that do not have AMSAT nets in their local areas.

Any comments can be directed to Bruce via the Internet at kb5zrv@amsat.org.

* FO-20 SCHEDULE *

=====

The FO-20 command station announced that FO-20 will be placed in Mode JA (Analog transponder mode) during Field Day 1994 (25-Jun-94 18:00 UTC through 26-Jun-94 18:00 UTC).

The current operating schedule is as follows:

Analog mode:

06-Apr-94 06:45 -to- 13-Apr-94 07:10 UTC

20-Apr-94 07:35 -to- 27-Apr-94 07:55 UTC
11-May-94 06:54 -to- 18-May-94 07:20 UTC

Digital mode:

Unless otherwise noted above.

[Info via Kazu Sakamoto, JJ1WTK]

★ FUJI AWARD INFORMATION ★

=====

Kazu Sakamoto, JJ1WTK, reports that a "Fuji" award is available to users of the FO-20 satellite. Applicants should have confirmed CW or SSB contacts with 10 different amateur stations through the FO-20 Amateur Satellite. A fee of 8 IRCs or US \$4 will be charged per award. An additional 2 IRCs will be charged for air mail delivery regardless of the number of the awards claimed. If QSL cards are submitted, sufficient funds for return postage will also be required.

Correspondence should be sent to:

Japan Amateur Radio League -- Award Desk
1-14-2 Sugamo, Toshima, Tokyo 170, Japan

★ SpaceNews BBS UPDATE ★

=====

The SpaceNews packet radio BBS sponsored by Mario, KD6ILO, reported in last week's issue of SpaceNews has changed frequency. It can now be found operating on 145.050 MHz. The latest issue of SpaceNews, as well as other AMSAT and satellite-related news and information can be found on this BBS. The BBS is also linked to the UoSAT-OSCAR-22 satellite through the N7RSN SatGate also located in Tacoma, WA.

★ THANKS! ★

=====

Thanks to all those who sent messages of appreciation to SpaceNews, especially:

K2UVG

VE3OZL

W4AT

ZR5JRS

VE7AHX

★ FEEDBACK/INPUT WELCOMED ★

=====

Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107

PACKET : KD2BD @ N2KZH.NJ.USA.NA
INTERNET : kd2bd@ka2qhd.ocpt.ccur.com -or- kd2bd@amsat.org

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<= SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--

John A. Magliacane, KD2BD * /\ /\ * Voice : 1-908-224-2948
Advanced Technology Center |/\ /\ /\ | Packet : KD2BD @ N2KZH.NJ.USA.NA
Brookdale Community College |/\ /\ /\ | Internet: kd2bd@ka2qhd.ocpt.ccur.com
Lincroft, NJ 07738 * /\ /\ * Morse : -.- -.. ..--- -... -..

Date: Mon, 11 Apr 1994 14:53:58 GMT
From: ihnp4.ucsd.edu!muninari.oz.au!hippo.ru.ac.za!caesar.wits.ac.za!
dlab167.ee.wits.ac.za!budhia@network.ucsd.edu
Subject: 50 Ohm Repeater
To: info-hams@ucsd.edu

I would like to about designing low cost band limited (10k-100k herz) 50 Ohm
Coaxial transistor repeaters.

Harshik

Date: Mon, 11 Apr 1994 14:49:14 GMT
From: ihnp4.ucsd.edu!swrinde!emory!wa4mei!ke4zv!gary@network.ucsd.edu
Subject: Any experience with doppler rdf (radio direction finders)?
To: info-hams@ucsd.edu

In article <1994Apr8.220021.29409@Csl.Stanford.EDU> pkahn@Csl.Stanford.EDU
(Philip Kahn) writes:

>I have been reading up on doppler RDF's. The Amateur Radio Handbook
>has an article that says they can only do well to about 5 degrees.
>Have you heard of systems or ways to do it that gives better results?

Doppler systems theoretically can give better results than that, but

the practical limitations of precision antenna arrays, the switching speed, precision reconstruction filters, and the radio's response all conspire to reduce practical accuracy to around 5 degrees.

For best accuracy, you need to:

1) Space the antennas as precisely as possible in a square. For 5 degree accuracy, spacing errors must be less than 1.3%, or about 0.24 inch at 2 meters. One degree accuracy would require array errors be held below 0.053 inch at 2 meters.

2) The higher the switching speed, the greater the doppler, and the easier small angle changes are to measure. So you want to use as high a switching rate as you can manage. This also relates to 3 and 4 below.

3) The reconstruction filter must accurately smooth the discrete antenna switch samples to a sinusoid so that the precise point of negative going zero crossing can be determined. A 4 pole antenna array only gives 4 sample points to define the waveform. Theoretically that's enough, but it's easier with an 8 or 16 antenna array.

4) The wider and flatter the phase bandwidth of the radio, the more precisely it will pass the doppler shift information on to the resolver.

This latter is a problem when using typical ham receivers, so switch speeds are typically held down to 2 kHz or less for a 4 pole array. This corresponds to a rotational rate of 500 rps. A cumulative error of 0.27% in the array, in the receiver passband phase response, in the reconstruction filter phase accuracy, and in the resolver will allow a 1 degree readout accuracy. That's tough to accomplish in practice.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

Date: 11 Apr 1994 14:30:15 GMT

From: ihnp4.ucsd.edu!agate!usenet.ins.cwru.edu!eff!news.kei.com!

newsstand.cit.cornell.edu!newsstand.cit.cornell.edu!usenet@network.ucsd.edu

Subject: Anyone Bicycle Mobile?

To: info-hams@ucsd.edu

In article <9404100601591.DLITE.gilbaronw@mn@delphi.com> Gilbert Baron, gilbaronw@mn@delphi.com writes:

>>I hope to be bicycle mobile on 2 meters this summer. Any suggestions on
>>equipment and antennas would be most welcome.

>>--

>>Michael J. Malloy	Amateur Radio N9WJV
>>Medical College of Wisconsin	Compuserve 70334,3563
>>Milwaukee, Wisconsin	Internet
mmjjmm@post.its.mcw.edu	

For both bicycle and motorcycle use I try to arrange it so that all the gear is connected to me, with the possible exception of the antenna (and there I prefer some kind of quick disconnect that will pull free in a get off) That way I don't have lots of tangles between me and the bike, and the gear travels with me when I get off for whatever reason.

Mostly I use an HT clipped someplace handy on the jacket or whatnot - the best arrangement has been a big pocket on the front of my jacket, or with a strap that places it above my shirt pocket area. On the bicycle I more often have it on my belt toward the back since I don't sit as upright as on the motorcycle.

I prefer to use a headset when bicycling, and a modified intercom headset when motorcycling. Either plugs directing into a modified HS51 vox/ptt/tot box that I use in touch on touch off mode (PTT ties up the hands too much, vox is too unreliable - especially when spontaneously 'advising' cage drivers on their habits and geneology :-)

On the bicycle I've used a hypodermic halfwave built into a piece of pvc pipe hose clamped to the uprights on my rear rack. Rather than folding back the shield of the coax, I took some copper foil tape and wrapped that around the outside of the coax for the 1/4 wave going back down the coax and soldered it to the shield. Sliding it inside the pvc changed the tuning somewhat and it had to be trimmed down.

It's a real joy to go motorcycling with a bunch of like minded hams and chat all afternoon as we wend our way among the Fingerlakes, occasionally hilltopping back to the home repeater to check in with the families. On the bicycle, it just adds a nice dimension

to be able to listen in as you crank away the miles,
even if you don't have enough air to join in on those
steep hills (I can't do *anything* else when I'm trying
to go up Buffalo St, Jeff :-).

73 de Kevin, WB2EMS

Date: Mon, 11 Apr 1994 17:06:56 GMT
From: worldbank.org!news@uunet.uu.net
Subject: C91J QSL Info
To: info-hams@ucsd.edu

In article <Cnr80I.nF@usna.navy.mil> m970984@usna.navy.mil (MIDN Vasily
Chistiakov (M970984)) writes:

>

>Does anyone know who the QSL manager for C91J is? Thanks

>

Try W8GIO - he handles cards for a lot of C9 stations. I heard rumor that he
will be relinquishing this post soon, so send the card before too long!

Good Luck, Darrell

Date: 11 Apr 94 15:02:18 GMT
From: news-mail-gateway@ucsd.edu
Subject: Delivery Failure Report
To: info-hams@ucsd.edu

From: NAME: Mail Postmaster
FUNC:
TEL: <POSTMASTER AT A1 AT ANDV02>
To: net%"Info-Hams@UCSD.EDU"@RCVAX@MRGATE

ALL-IN-1 was unable to deliver your message dated to
ADAMS,SE - no such ALL-IN-1 account
on node ANDV02

The subject of the message was :
Info-Hams Digest V94 #402

Date: 11 Apr 94 16:03:04 GMT
From: news-mail-gateway@ucsd.edu

Subject: Delivery Failure Report
To: info-hams@ucsd.edu

From: NAME: Mail Postmaster
FUNC:
TEL: <POSTMASTER AT A1 AT ANDV02>
To: net%"Info-Hams@UCSD.EDU"@RCVAX@MRGATE

ALL-IN-1 was unable to deliver your message dated to
ADAMS,SE - no such ALL-IN-1 account
on node ANDV02

The subject of the message was :
Info-Hams Digest V94 #403

Date: 11 Apr 94 09:14:47 EST
From: ihnp4.ucsd.edu!agate!usenet.ins.cwru.edu!magnus.acs.ohio-state.edu!cis.ohio-state.edu!pacific.mps.ohio-state.edu!ohstpy.mps.ohio-state.edu!miavx1!miavx3.mid.muohio.edu!clmorgan@network.ucsd.
Subject: FCC Delays
To: info-hams@ucsd.edu

In article <2o9okqINN1oi@blackhole.delmarva.com>, scoggin@delmarva.com (John K Scoggin Jr) writes:

> Anyone have a feel for how long licenses take to get from FCC Gettysburg?
> Last I heard it was 10 weeks :-(
>
> I passed my Tech this morning (and bought some code practice stuff :-)
> The VEC said (jokingly, I hope!) that I could be up to 20 wpm by the time
> I see a license.
>
> - John
>
> ---

> +-----+
> | John K. Scoggin, Jr. Email: scoggin@delmarva.com |
> | Supervisor, Network Operations scoggin@ee.udel.edu |
> | Delmarva Power & Light Company Phone: (302) 451-5200 |
> | 500 N. Wakefield Drive NOC: (800) 388-7076 |
> | Newark, DE 19714-6066 Fax: (302) 451-5321 |
> | The opinions expressed are not those of Delmarva Power, simply the |
> | product of an over-active imagination... |
> | Time is Nature's way of preventing everything from happening at |
> | once. |
> +-----+

>
>

Good possibility ... if you study intently and learn quickly. Oh, yes, it's nice to be motivated as well.

Seriously John, congratulations on your achievement and welcome to the wonderful world of ham radio. Hope it is all you expect and more.

73 >< Carl
K8NHE

Date: Mon, 11 Apr 94 12:11:48 -0500
From: yale.edu!noc.near.net!news.delphi.com!usenet@yale.arpa
Subject: FT-530 DC CONNECTOR
To: info-hams@ucsd.edu

Marsolais, Pierre <P.Marsolais@mailstop.telesat.CA> writes:

>The part number for the connector is E-DC-6
>And Yeasu's phone number is (310) 404-2700

A propblem with the manual, i think, is that the plug is a 4mm unit, not a 3.5, and there appears to be NO domestic source for these!

It looks like the molded unit for 6-8 bux is the only way to go..

does the 3.5mmm standard plug fit??

73

Date: Mon, 11 Apr 1994 12:17:10 GMT
From: ihnp4.ucsd.edu!usc!math.ohio-state.edu!darwin.sura.net!jabba.ess.harris.com!news.ess.harris.com!su102w.ess.harris.com!harris.pander01@network.ucsd.edu
Subject: Ham radio in Germany
To: info-hams@ucsd.edu

In article <1994Apr9.184848.1@iccgcc.cs.hh.ab.com> lieser@iccgcc.cs.hh.ab.com (x3670) writes:

>Path: news.ess.harris.com!jabba.ess.harris.com!sol.ctr.columbia.edu!
howland.reston.ans.net!pipex!uunet!news1.hh.ab.com!iccgcc.cs.hh.ab.com!lieser
>From: lieser@iccgcc.cs.hh.ab.com (x3670)
>Newsgroups: rec.radio.amateur.misc
>Subject: Ham radio in Germany

>Date: 9 Apr 94 18:48:48 EST
>Organization: Allen-Bradley Company, Inc.
>Lines: 13
>Distribution: inet
>Message-ID: <1994Apr9.184848.1@iccgcc.cs.hh.ab.com>
>NNTP-Posting-Host: alf.cs.hh.ab.com

>Is the 2-meter band typically the most used band in Europe also
>(particularly Germany)? I know that in Europe it only extends
>from 144-146MHz, while the 70cm band is much wider. I had thoughts
>of taking a small rig while vacationing. Does anyone have any
>experience with this? (I could only hope that I'd pass the test
>and receive my license before September.)

>I've looked on various ftp sites in Finland and Germany and can't
>seem to find much info. Also, we don't get 'de' groups here.

>Thanks,
>Ed Lieser
>Allen-Bradley Co., Cleveland, Ohio

I've done some hamming in Germany, and I have a good bit of info regarding voice repeaters and packet nodes. I have not tried to operate 440 (which is between 430 & 440 MHz there -- not so easy with a 440 to 450 MHz US FM rig...), but I know that there are a lot more 70cm repeaters than 2m ones. The 2m systems are there are mostly wide-coverage machines, and near the big cities, you can work at least a couple of them. Out in the country, especially in the hills, forget it. An HT and a mag-mount antenna will be adequate most places.

You also need to know that most of the systems require a 1750Hz toneburst to access the repeaters. You can buy one, just like a CTCSS encoder, commercially from Comm. Specialists for about \$25. Or you can practice whistling at the right frequency -- a lot of people do that too.

Be sure to file for a temporary license before you go. The DARC seems to respond pretty quickly to applications (a couple of weeks recently), but there's no guarantee that they will.

I have some German repeater maps (old, but mostly still correct) and packet node lists, if anyone needs them.

Paul Anderson Phone: 407-729-7969, FAX: 407-729-7851
Internet: harris.pander01@ic1d.harris.com
Amateur Packet: AB4VA @ N5AUV.#MLBFL.FL.USA.NA

Date: 11 Apr 94 17:27:05 GMT
From: dog.ee.lbl.gov!agate!howland.reston.ans.net!noc.near.net!news.delphi.com!
usenet@ucbvax.berkeley.edu
Subject: Kenwood TH-78A *OR* Yaesu FT-530
To: info-hams@ucsd.edu

Marc Richard Wollemborg <mrw13@namaste.cc.columbia.edu> writes:

>Has anybody tried both of the above radios and could tell me which of the two
>I should choose? I hear the Kenwood is nice and small, has a great display,

Marc,

Both of these radios is nice and has very useable features.

Any dual-bander will experience some intermod and adjacent channel interference, especially ones that cover extended spectrum like the TH78. I have a 78 and my dad has a 530, so i have been able to compare them side by side. I think that both get hammered by RF ("intermod"...) equally, and both get good/excellent audio and signal reports. Each manages power well, and the 530 does a higher-tech job by controlling power use diuring rx/tx... i mean transcieve. The thing that i do not like babout the 530 is that the VFO setup is not flexible. You can only transmit @M 2 meter on the left and 44 on the right. You can program 2M on the 440 side and VV, but not transmit from them...

The 78 gives you the ability to reacall and use any memory frequency on either side. Eaach VFO will transcieve on both bands and they work equally well. You only have to program each frequency (with all associated info, tomne, etc...) once, and you can recall it from either VFO.

This may seem picky, but i think that it is a big difference. Either rig will get you on both bands in good style, but those Yaesu ads only tell you part of the differences.

Oh yeah, the 530 does do PL scan, but the repeater has to be pretty clear, very active during the scan, and pass the PL tone through to the output, and not all do.

Good Luck.

Pete, N1QDQ

Date: Mon, 11 Apr 1994 16:10:04 GMT
From: ihnp4.ucsd.edu!sdd.hp.com!hp-cv!hpcvsnz!tomb@network.ucsd.edu
Subject: Low cost antenna required

To: info-hams@ucsd.edu

: In article <budhia.12.2DA65157@underdog.ee.wits.ac.za>

budhia@underdog.ee.wits.ac.za writes:

: >

: >I require some info on designing a low cost antenna to rural communities

: >where signal levels are fairly low. Thus a low cost outdoor antenna is

: >required.

: What frequency?

Are the signals coming from one direction only? What existing structures
can support the antenna? (Often the support is as expensive as the antenna.)
How far apart are receiver and transmitter?

Date: 11 Apr 94 16:47:17 GMT

From: agate!howland.reston.ans.net!news.intercon.com!news1.digex.net!access3!

bote@ucbvax.berkeley.edu

Subject: more heinous thoughts

To: info-hams@ucsd.edu

ostroy@cbnewsh.cb.att.com (Dan Ostroy) writes:

>Why do you assume that. If I am an infrequent checkin on your

>net, and my third listing is for McLean VA, would you know

>who I am?

As net control, I would say, "The station listing
traffic for McLean, VA say your callsign only. Over."

It's called good operating technique, something which
is sadly lacking these days.

--

rec.nude: your exit to good living along the Information Toll Road.

finger bote@access.digex.net for PGP key and an operator will help you.

How 'bout them Os!!

Date: 11 Apr 94 16:55:39 GMT

From: agate!howland.reston.ans.net!news.intercon.com!news1.digex.net!access3!

bote@ucbvax.berkeley.edu

Subject: online repeater directory

To: info-hams@ucsd.edu

yee@mipgsun.mipg.upenn.edu (Conway Yee) writes:

```
># Universal and Free Listing of Repeaters for Radio Amateurs
># The file format (version 0.3) shall be as follows. Consider this file
># 14          input frequency of the repeater (MHz or standard offset: + or -)
>#          The use of +,- may have to be deleted in the future if this
>#          repeater directory is extended to other countries that have
>#          differing standard offsets.
```

Delete +/- now. Going back later to figure out what the
"standard" offset was meant at the time the info
was contributed will be a pain.

--

rec.nude: your exit to good living along the Information Toll Road.
finger bote@access.digex.net for PGP key and an operator will help you.
How 'bout them Os!!

Date: Mon, 11 Apr 1994 13:45:30 GMT
From: ihnp4.ucsd.edu!swrinde!emory!wa4mei!ke4zv!gary@network.ucsd.edu
Subject: WWV Antennas
To: info-hams@ucsd.edu

In article <Co2MtE.LIA@news.Hawaii.Edu> jherman@uhunix3.uhcc.Hawaii.Edu (Jeffrey Herman) writes:

>In article <940410130354_1@ccm.hf.intel.com> Cecil_A_Moore@ccm.CH.INTel.COM
(Cecil A Moore) writes:

```
>>> But WWV is using just vertical dipoles (not phased, as with WWVH). There
>>> are certainly higher gain antennas than a dipole that will still retain
>>> an omnidirectional 'orientation'. Jeff NH6IL
>>
```

```
>>Hello again, Jeff. My point is that one cannot change the gain of an
>>antenna system without changing the radiation pattern. In that
>>process, while Hawaii may enjoy an increase in signal level,
>>Arizona may suffer a decrease in signal level. Who's going to
>>be forced to suffer because of the antenna system change?
```

>

```
>Cecil: Compare a 1/4 wave ground plane to a 5/8 wave gp: both have
>omnidirectional patterns but the 5/8 wave gives you a lower angle
>of radiation, providing a certain 'gain' over the 1/4 wave gp.
```

>

```
>WWV wants omnidirectional coverage; there are antennas that would
>give a lower take-off angle than a vertical dipole and still provide
>this coverage. Right?
```

WWV wants coverage to as much of the US as possible. Lowering the

takeoff angle will widen the skip zones where WWV will not be heard. Low angle only radiation is not what's wanted for maximum coverage. What's wanted is radiation at all takeoff angles that will support refraction back to Earth. That minimizes the size of the skip zones. That's why they use a vertical dipole pattern. Low angle radiation is only useful for DXing. WWV is not in the DX game.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

Date: 11 Apr 1994 16:42:02 GMT
From: ncar!newsxfer.itd.umich.edu!zip.eecs.umich.edu!yeshua.marcam.com!
news.kei.com!ssd.intel.com!chnews!scorpion.intel.com!jbromley@ames.arpa
Subject: WWV Antennas
To: info-hams@ucsd.edu

In article <2o9qst\$q89@agate.berkeley.edu>,
Ken A. Nishimura <kennish@kabuki.EECS.Berkeley.EDU> wrote:

>I think that people are applying 2-D thinking to a 3-D
>world. There are two main ways of getting "gain", both
>of which involve concentrating power in one direction
>at the expense of another.

Yeah:

- (1) Gain in the azimuth plane.
- (2) Gain in the elevation plane.

>WWVH uses what is known
>as a broadside or endfire (can't remember which it was
>from the description) array of vertical dipoles to create
>a pattern, which when viewed from above, appears to
>concentrate its power to the west.

Date: (null)
From: (null)
>However, there is another way to concentrate power, which
>is what most FM broadcast stations do. If you look at
>a single dipole vertically oriented, you will see that it

>has a omni pattern viewed from above. Fine. If you
>now view it from the ground, a lot of power goes up into the air,
>some of it at nearly 90 degrees to the ground. (An ideal
>dipole has a null at 90 deg.)

If you look closely at the elevation patterns of a vertical dipole,
you will find that there isn't that much power above 45 degrees.

>Now, recall what you learned
>about HF propogation. Power that is sent nearly straight
>up has a much lower chance of skipping (being refracted) than
>one with a low angle of incidence.

That depends on the frequency and condition of the ionosphere.
Below a certain frequency, called the critical frequency, a
signal at vertical incidence to the ionosphere is reflected.
That frequency typically ranges from 2 to 10 MHz.

>Thus, that power is most likely
>being wasted. A stacked dipole of proper phasing (two dipoles
>on top of another) can use constructive interference to put more
>power closer to the horizon rather than up in the air.
>This puts more power into the low angles of incidence which are
>much more likely to be refracted and/or reflected back down
>to earth.

The question I have for you is: Reflected back to where on the
earth???

> Note, however, that the omni pattern as viewed
>from above is NOT disturbed. This is how one gets "omni"
>gain. FM broadcasters do this to put as much power as
>possible into the horizon. Not much advertising potential high
>up in the air.....

This is true for VHF space wave propagation on the earth's surface.
It is not necessarily true for sky wave propagation at HF.

>Ken

Jim, W5GYJ

End of Info-Hams Digest V94 #404
